includes corners that have been rounded in a corresponding manner.

11. Method for the compacting and subsequent welding of electric conductors such as stranded conductors, wherein the conductors are placed in a compacting chamber, which is adjustable in two mutually intersecting directions for the purposes of adjusting the cross-section and is defined by at least one surface of a sonotrode, one surface of a counter-electrode and one surface of a delimitation element, and the conductors are initially compacted to reduce the cross-section, wherein following the compacting process a characteristic quantity of the compacting chamber is determined and on the basis of the said characteristic quantity, welding parameters stored in a memory are called up and the conductors are then welded accordingly, characterised in that a chamber with a substantially triangular cross-section which forms a through opening for the conductors and which has three delimitation surfaces that are formed by the surfaces of the sonotrode, the counter-electrode and the delimitation element is used as the compacting chamber, wherein the surface of the sonotrode extends in an inclined manner relative to the horizontal and the surface of the delimitation element extends in a vertical manner, in that the conductors are placed into the compacting chamber with the surface of the counter-electrode extending externally of the compacting chamber and in that during the welding process each surface of the sonotrode, the counter-electrode and the delimitation element working on the conductors is reduced.

12. Method according to claim 11, characterised in that the length of a delimitation surface transversely relative to the through opening of the compacting chamber is determined as the characteristic quantity.

shaped in such a manner that the cross-section of the compacting chamber (20) includes corners that have been rounded in a corresponding manner.

11. Method for the compacting and subsequent welding of electric conductors such as stranded conductors, wherein the conductors are placed in a compacting chamber, which is adjustable in two mutually intersecting directions for the purposes of adjusting the cross-section and is defined by at least one surface of a sonotrode, one surface of a counter-electrode and one surface of a delimitation element, and the conductors are initially compacted to reduce the cross-section, wherein following the compacting process a characteristic quantity of the compacting chamber is determined and on the basis of the said characteristic quantity, welding parameters stored in a memory are called up and the conductors are then welded accordingly, characterised in that a chamber with a substantially triangular cross-section which forms a through opening for the conductors and which has three delimitation surfaces that are formed by the surfaces of the sonotrode, the counter-electrode and the delimitation element is used as the compacting chamber, wherein the surface of the sonotrode extends in an inclined manner relative to the horizontal and the surface of the delimitation element extends in a vertical manner, in that the conductors are placed into the compacting chamber with the surface of the counter-electrode extending externally of the compacting chamber and in that during the welding process each surface of the sonotrode, the counter-electrode and the delimitation element working on the conductors is reduced.

12. Method according to claim 11, characterised in that the length of a delimitation surface transversely relative to the through opening of the compacting chamber is determined as the characteristic quantity.

EXPLANATION REFERRED TO IN ARTICLE 19 (1)

Claims

Ultrasound welding device for compacting and/or welding electric conductors

1. Ultrasound welding device for compacting and/or welding electric conductors (10), more especially for producing via nodes or end nodes of stranded conductors, said ultrasound welding device comprising a sonotrode (12), one portion of which is a first delimitation surface (18) of a compacting chamber (20) that accommodates the conductors, said compacting chamber in addition being defined by a portion of a counter-electrode (14) that forms a second delimitation surface (22) and by at least one additional third delimitation surface (24) that is formed by a portion of a delimitation element (16), wherein the compacting chamber (20) has a substantially triangular open cross-section, which is surrounded by the mutually adjustable portions of the sonotrode (12), of the delimitation element (16) and of the counter-electrode (14), and, when the delimitation element is displaced, the counter-electrode is positively driven in such a manner that during the compacting or respectively welding of the conductors (10), the edge (30) of the counter-electrode adjoining the sonotrode is adjustable along the first delimitation surface (18) while a constant or almost constant gap is maintained, characterised in that the first delimitation surface that is formed by the portion of the sonotrode (12) extends inclinedly relative to the horizontal, in that the third delimitation surface (24) that is formed by the delimitation element (16) extends vertically and in that the counter-electrode (14) projects from the delimitation element so as to be displaceable..

2. Ultrasound welding device according to claim 1, characterised in that the first delimitation surface (18) and the third delimitation surface (24) form an angle β where $30 < \beta < 60°$.

3. Device according to claim 1, characterised in that the second delimitation surface (22) that is formed by the counter-electrode (14) forms an angle γ with the third delimitation surface (24) that is formed by the delimitation element (16), where γ

= 90° or $\gamma > 90°$.

4. Device according to claim 1, characterised in that the positive driving can be controlled mechanically or by motor, wherein the counter-electrode (14) interacts with a positive driving, the course of which, in at least one portion, corresponds to the course of the first delimitation surface (18).

5. Device according to claim 1, characterised in that all the delimitation surfaces (18, 22, 24) are structured.

6. Device according to claim 1, characterised in that the sonotrode (12) includes a plurality of delimitation surfaces (18).

7. Device according to claim 6, characterised in that in its region comprising the delimitation surfaces (18), the sonotrode (12) has a polygonal cross-section, such as an octagonal cross-section.

8. Device according to at least one of the preceding claims, characterised in that the counter-electrode (14) is positively driven in such a manner that when placing the conductors into the compacting chamber (20), the counter-electrode extends externally of the compacting chamber.

9. Device according to at least one of the preceding claims, characterised in that an intermediate element (58) such as an intermediate plate extends between the sonotrode (12) and the delimitation element (16).

10. Device according to at least one of the preceding claims, characterised in that the edge (56) of the sonotrode (12) adjoining the delimitation element (16) and/or the edge (54) of the delimitation element (16) adjoining the counter-electrode (14) and/or the edge (52) of the counter-electrode adjoining the sonotrode is shaped in such a manner that the cross-section of the compacting chamber (20)